Revue internationale des Sciences biologiques, March, 1881.—Prof. Strasburger, the history of the actual state of the cell theory.—M. Debierre, physical and biological dynamism.—Prof. Ray Lankester, embryology and classification of animals.

Brain : a Journal of Neurology.—Part 13 for April, 1881, contains, of original articles:—Dr. J. C. Bucknill, on the late Lord Chief Justice (Sir A. Cockburn) of England.—Dr. B. Bramwell, on the differential diagnosis of paralysis.—Dr. A. Flint, jun., on the cause of the movements of ordinary respiration.—Dr. Julius Althaus, on some points in the diagnosis and treatment of brain disease.—Dr. C. S. W. Cobbold, observations on certain optical illusions of motion.—Bevan Lewis, methods of preparing, demonstrating, and examining cerebral structure in health and disease.

Revue des Sciences Naturelles, 2me série, tome 2, No. 4, March, 1881, contains:—M. A. Salvatier, on the mechanism of respiration in the Chelonians (plates 5 and 6).—Dr. E. Jourdan, notes on the anatomy of *Distomum clavatum*, Rud (plates 7 and 8).—M. A. Villot, another word on the fresh-water Pliocene of the Bas Dauphiné.—M. Collot, provisional study of the Anthracotherium remains from the lignites of Volx.—M. Viguier, note on the lithographic chalks of Nebias.—M. Kieffer, on the herborisations of Strobelberger at Montpellier in 1620 (*finis*).—Scientific review of works published in France on zoology, botany, and geology.

Journal of the Asiatic Society of Bengal, 1880, No. 4 (vol. xlix. Part 2).—W. T. Blanford, contributions to Indian Malacology, No. 12—new land and fresh-water shells from Southern and Western India, Burmah, the Andamans, &c. (plates 2 and 3).—J. Wood Mason and L. de Nicéville, diurnal Lepidoptera from Port Blair, with descriptions of some new or little-known species, and of a new species of Hestia from Burmah (plate 13).—W. T. Blanford, description of an Arvicola (*A. Wynnei*) from the Punjab Himalaya.—Capt. G. F. L. Marshall and L. de Nicéville, new species of Rhopalocerous Lepidoptera from the Indian region.—J. Wood Mason, Parantirrhœa Marshalli, the type of a new genus and species of Rhopalocerous Lepidoptera from South India.

Verhandlungen der k. k. zoologisch-botanischen Gesellschaft in Wien, Bd. xxx., Heft 2, 1881, contains the minutes of proceedings, June to December, 1880, and the following memoirs:—F. Krasan, report in connection with new investigations on the development and origin of the lower organisms (plate 7).—Dr. A. v. Krempelhuber, a new contribution to the lichen flora of Australia.—Th. Beling, the metamorphosis of *Cænomyia ferruginea*, Scop.—Prof. Josef Mik, on the mounting and collecting of Diptera, descriptions of new Diptera, and dipterological notes (plate 17).—H. B. Moschler, contribution to the Lepidoterous fauna of Surinam, No. iii. (plates 8 and 9).—S. Schulzer, mycological contributions.—J. Stussiner, *Leptomastax Simonis*, a new species of subterranean beetle.—Hans Leder, on the Coleopterous fauna of the Caucasus, No. iii., in co-operation with Dr. Eppelsheim and E. Reitter.—D. Hirc, the Molluscan fauna of the Liburnian Karst.—Fritz Wachtl, contribution to our knowledge of the European gall-producing insects (plate 18).—Count E. Keyserling, new American spiders (plate 16).—Dr. Ludwig Lorenz, on *Distomum robustum*, sp. n., from the African elephant (plate 19).—A. von Pelzeln, on a hornless deer.—Dr. F. Löw, on a more exact knowledge of the procreativeness of the sexual individuals in Pemphigus.—Dr. R. Drasche, on a new species of Echiurus from Japan (*E. unicinctus*), and remarks on *Thalessema erythrogrammon*, Leuckart (plate 20).—Dr. R. Bergh, monograph of Polyceridæ (plates 10 to 15).

Gegenbaur's morphologisches Jahrbuch, vol. 17, part 1, contains—Prof. Oscar Herburg, on the exoskeleton of fishes: No. 3, the Pediculati, the Discoboli, the genus Diana, the Centriscidæ, some genera of Triglidæ, and the Plectognathi (plates 1 to 4).—On the duplex nature of the ciliary ganglion, by Prof. W. Krause (plate 5).—On the abdominal muscles of the crocodiles, lizards, and tortoises, by Dr. Hans Gadow (plate 6).—Contributions to the developmental history of Petromyzon, by W. B. Scott (Princeton), (with plates 7 to 11).—On the "pars facialis" of the lachrymal bone, by Prof. Gegenbaur.

Rivista Scientifico-Industriale, No. 6, March 31.—On earthquakes, by Dr. Bassani.—New plant, by S. Fenzi.—Determination of the velocity of sound in chlorine, by Prof. Martini.

Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig, 1879–80.—On double monstrosities in fishes, by Prof. Rauber.—On the finer structure of milk-glands, by the same.—On Aphthæ, by Prof Hennig.—On results of glacier thrust, by Prof. Credner.—On the geological results of a deep boring at the Berlin Railway at Leipzig, by the same.—On the reduction of anatomical forms to equal size, by Prof. Hennig.—On the system of spinal ganglia, by Prof. Rauber.—On chlorophyll, by Dr. Sachsse.—On an optical combination which may be applied as objective of a telescope, by Dr. von Zahn.—On *Lichen bombicinus*, by Prof. Hennig.—On the development of cells to organs of locomotion, by Dr. Simmroth.—On Negrito skeletons from the Philippines in European museums, by Herr Meyer.—On the cycle of forms of some unicellular algæ, by Herr Richter.

Atti della R. Accademia dei Lincei, vol. v. fasc. ix.—On the discharge of condensers, the theory of the electrophorus, and its analogy with condensers, by Prof. Villari.—New observations of Pechüle's comet at the Royal Observatory of the Roman College, by P. Tacchini.—Two solar regions in continuous activity during 1880, by the same.—On the motion of a heterogeneous fluid ellipsoid, by S. Betti.—New method for the volumetric evaluation of molybdenum, by Signors Mauro and Dunesi.—On some compounds of the furfuric series, by Signors Ciamician and Dennstedt.—Separation and determination of nitric and nitrous acid, by S. Piccini.—Observations on the method commonly adopted in treatment of like fundamental questions of infinitesimal analysis, by S. Casorati.—On the drainage works of the Roman subsoil, by S. Tommasi Crudeli.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, May 3.—Prof. W. H. Flower, LL.D., F.R.S., president, in the chair.—Prof. F. Jeffrey Bell, F.Z.S., read the first of a series of papers on the systematic arrangement of the *Asteroidea*. In the present communication the author directed attention to the large number—more than eighty—of described species of the genus *Asterias*, the subdivision of which had never yet been attempted. After a list of the species with reference to one description of each, and a list of the synonyms, he proceeded to describe and make use of certain characters as an aid in the classification of the species; the number of rays, of madreporiform plates, and of ambulacral spines forming the more important, and the form and character of the spines the less important points. The author then proposed a mode of formulating results by the use of certain symbols, and concluded by describing five new species.—A communication was read from Dr. M. Watson, F.Z.S., containing some observations on the anatomy of the generative organs of the spotted hyæna, in continuation of a previous paper on the same subject.—Mr. Oldfield Thomas, F.Z.S., read a memoir on the Indian species of the genus *Mus*. The present paper was an attempt to clear up the existing confusion in the synonymy of the Indian species of this genus, of which the author recognised about nineteen as valid.—A communication was read from Mr. Edgar A. Smith, containing remarks on some specimens of *Cypræa decipiens*, lately received by the British Museum.—A second paper by Mr. Smith contained the description of two new species of shells from Lake Tanganyika.—Capt. G. E. Shelley read a paper containing an account of seven collections of birds recently made by Dr. Kirk in the little explored regions of Eastern Africa. Two new species were proposed to be called *Coccystes albonotatus* and *Urobrachya Zanzibarica*.—Mr. Arthur G. Butler, F.Z.S., read a paper on a collection of Lepidoptera made in Western India, Beloochistan, and Afghanistan by Major Charles Swinhoe. The collection contained examples belonging to three new genera and fifteen new species.

Chemical Society, May 5.—Dr. Roscoe, president, in the chair.—The following papers were read:—On the action of humic acid on atmospheric nitrogen, by E. W. Prevost. The author has repeated some of the experiments of E. Simon (*Land. Vers. Stats*, xviii.) on the above action; he is quite unable to confirm the results of that investigator, and concludes that under ordinary circumstances no formation of ammonia takes place when humic acid and nitrogen are allowed to remain in contact.—On the active and inactive amylamines corresponding to the active and inactive alcohols of fermentation, by R. T. Plimpton. The author has prepared and examined the mono-, di-, and triamylamines and some of their compounds. The active amylamines polarise strongly; their salts do not crystallise

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so well as those of the inactive amylamines; there is also some difference in the boiling-points and specific gravities of these two classes of bodies.—On the action of sodium alcoholates on fumaric ethers, by T. Purdie. An acid is formed which is an ethylethermalic acid isomeric with the monethylmalate of Desmondisir. The action of sodium isobutylate on isobutyl fumarate was also studied; an isobutylmalic acid was formed.—On the products of the action of alkalies on ethylic β ethylacetosuccinate, by L. T. Thorne. An ethylsuccinic acid was obtained by the action of strong potash identical with that obtained from the α succinate; with weak potash 5 per cent. α-ethyl-β-aceto-propionic acid was obtained, which on boiling gave off water and formed a body $C_7H_{10}O_2$.—On some carbazol compounds, by C. H. Rennie and W. R. Hodgkinson. The authors have studied the action of potassium carbazol on ethyl chlorocarbonate; a new urethane was obtained.

Geological Society, April 27.—R. Etheridge, F.R.S., president, in the chair.—Samuel Gerrard Kirchhoffer, Arthur Henry Shakspere Lucas, and Lieut. Frederick Thomas Nelson Spratt were elected Fellows of the Society. The following communications were read:—On the precise mode of accumulation and derivation of the Moel Tryfan shelly deposits; on the discovery of similar high-level deposits along the eastern slopes of the Welsh mountains; and on the existence of drift-zones showing probable variations in the rate of submergence, by D. Mackintosh, F.G.S.—On the correlation of the Upper Jurassic rocks of England with those of the Continent, by the Rev. J. F. Blake, M.A., F.G.S. Part I. the Paris basin. This was an attempt to settle the many questions of correlation arising out of the detailed descriptions given of the various localities in the Paris basin where Upper Jurassic rocks are developed, by a consecutive survey of them all; undertaken by the aid of a grant from the "Government Fund for Scientific Research." In previous papers the names used for the great sub-divisions and their boundaries were adopted without material modification; in the present such modifications were proposed as may bring the English and Continental arrangements into harmony. Five distinct areas were considered in this paper:—(1)The southern range; (2) the Charentes; (3) Normandy; (4) the Pays de Bray; (5) the Boulonnais. From this study it was proposed—that the "Lower Calcareous grit" and almost all the Coralline oolite should be placed in the Oxfordian series as the upper division, under the name "Oxford Grit" and "Oxford Oolite"; that the Corallian consists of two parts, the Coral Rag and the Supra-coralline beds; that the Kimmeridgian should include the Astartian and Virgulian, the Pterocerian being a subzone; that the "Upper Kimmeridge" and the Hartwell clay, with the "Portland sand," should make a new sub-division to be called Bolonian, the northern and southern types being both represented at Boulogne, which may be divided into upper and lower; and that the true Portland limestone and the Purbeck be united into one group, as Lower and Upper Portlandian; the fact of the latter being freshwater being paralleled by parts of the true Portland having that character.—On fossil chilostomatous Bryozoa from the Yarra-Yarra, Victoria, Australia, by Arthur William Waters, F.G.S.

Anthropological Institute, April 26.—Prof. W. H. Flower, F.R.S., vice-president, in the chair.—Mr. J. E. Price exhibited a collection of bones of man and other animals discovered by himself and Mr. Hilton Price at the Roman villa at Brading, Isle of Wight. The bones had been examined by Prof. Flower, who reported that they were all in much the same state of preservation, and probably all contemporaneous. They consisted of (1) Man: fragments probably of one and the same skeleton. From the condition of the bones it is certain that the individual was adult and probably of middle age and about the average stature. (2) Dog: Numerous remains of at least three individuals, all of nearly the same age and size, not more than half-grown, having only the milk teeth in place. (3) Ox: Young. (4) Horse: One incisor tooth.—Mr. A. L. Lewis read a paper on some archaic structures in Somersetshire and Dorsetshire. The author, in speaking of the great stone circles at Stanton Drew, near Bristol, mentioned the elaborate astronomical theories which had been propounded concerning them by antiquaries of the last century, and said that, while he had no belief in them, he thought that the larger stone circles, of which this group was a specimen, had been used as places for solar worship; there was in nearly all of them some special reference to the north-east, the quarter in which the sun rose on the longest day; in some, however, there were outlying stones towards the south, and this was the case at a circle at Gorwell in Dorsetshire; these stones, whether to the south or the north-east, were evidently so placed for some special object, as the number of instances in which they occurred was too great for their position to be merely accidental. The paper was illustrated by the exhibition of plan, model, and some worked flints, &c., found by the author at some of the monuments mentioned by him.—Mr. G. M. Atkinson read a paper on a new instrument for determining the facial angle. A needle is inserted into each optic foramen, and fixed at a point in the centre of each orbit; the needles are connected by an axle with flat ends which slide on the needles; an index-pointer is attached to the axle in the middle, and is in the same visual horizontal plane as the needles. A bar, carrying a semi-circular protractor, is constructed to be affixed at the centre-point of the protractor, and to have free movement in a vertical plane alongside the index-pointer. If this bar-protractor be placed in position on the skull so as to touch the ophryon and alveolar points, the number of degrees in the facial angle, by this method, will be indicated by the index-pointer on the protractor.—The Rev. W. S. Caiger read a paper on Thomas of Aquinum and anthropology.

Royal Microscopical Society, April 13.—Prof. P. Martin Duncan, F.R.S., president, in the chair.—A paper by Mr. W. H. Shrubsole and Mr. F. Kitton, on the diatoms discovered by the former in the London clay, was read. Also one by Dr. Anthony, on sliding stage diaphragms.—The other subjects discussed were E. Hallier's view of the cause of the movements of diatoms, the "Society" standard screw, *Amphipleura pellucida* illuminated by the vertical illuminator, and the structure of wood-sections exhibited by Mr. Stewart.—Mr. Powell exhibited an oil-immersion $\frac{1}{8}$-inch objective of the exceptionally large aperture of 1·47 N.A. (1·0 = 180° in air).

EDINBURGH

Royal Society, April 17.—Sir William Thomson, honorary vice-president, in the chair.—Prof. Helmholtz, in an interesting communication on electrolytic conduction, stated that the experiments he was about to describe were a continuation of experiments he had formerly made in connection with certain objections that had been urged against Faraday's law of electrolysis. He had already shown that a feeble galvanic current could be passed through an electrolytic preparation of acidulated water, even though the electromotive force was not sufficient to decompose the water. The action of such a current would be, in the first place, to coat the electrodes, the one with hydrogen, the other with oxygen. The hydrogen however speedily combined with the free oxygen in the air and liquid to form water, while the oxygen on the positive electrode as speedily dissipated itself. In this way the polarisation in the electrolytic cell was kept down, so that the original current was never wholly destroyed. In the later experiments Prof. Helmholtz had completely removed the air from the neighbourhood of the electrolyte. This was effected by an ingenious use of the property possessed by palladium of holding large quantities of hydrogen gas in its pores. With this specially-prepared cell he found that a feeble current passed through it fell down to zero in a very short time, the difference of potential due to the polarisation of the electrodes quite balancing the original electromotive force. On throwing off the battery the polarised electrolytic cell showed on a delicate galvanometer a reversed current, which rapidly fell to zero from an intensity equal to that of the original current before polarisation set in. Another result to which his researches had led him was that there were no *chemical* forces acting between the molecules of an electrolyte other than those that existed in virtue of what might be called their electric charges—a result which cannot fail to have an important bearing upon the question of chemical constitution.—Sir William Thomson communicated a short paper on the average pressure due to impulse of vortex-rings on a solid. When a vortex-ring is approaching a plane large in comparison to the dimensions of the ring, the total pressure over the surface is *nil*. When a ring approaches such a surface it begins to expand, so that if we consider a finite portion of the surface the total pressure upon it due to the ring will have a finite value when the ring is close enough. In a closed cylinder any vortex-ring approaching the plane end will expand out along the surface, losing in speed as it so does, until it reaches the cylindrical boundary, along which it will crawl back, on rebounding, to the other end of the cylinder. As it approaches, it will therefore exert upon the plane surface a definite outward pressure, whose time-integral is equal to the original momentum of the vortex, and

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a precisely equal pressure as it leaves the surface. Hence, in the case of myriads of vortex-rings bombarding such a plane surface, though no individual vortex-ring leaves the surface immediately after collision, for every vortex-ring that gets entangled in the condensed layer of drawn-out vortex-rings another will get free, so that in the statistics of vortex-impacts the pressure exerted by a gas composed of vortex-atoms is exactly the same as is given by the ordinary kinetic theory, which regards the atoms as hard elastic particles.—Prof. Tait, in a brief paper on the crushing of glass by pressure, indicated certain results he had obtained by experiments, which were in good accord with the mathematical theory of the strains to which a closed cylindrical glass tube under high pressure is subjected. Of the three stresses, radial, tangential, and longitudinal, which may be regarded as acting upon any elementary portion of the wall of the tube, the two former have a *shearing* effect, to which the crushing of the tube is due. From the few experiments that had been completed it appeared that the shear required to disintegrate ordinary lead glass was about $1 \pm \frac{1}{20}$.—Prof. J. Blyth gave an account of experiments which he had made on the cause of the sounds produced in the microphone receiver. He also exhibited another form of telephone, in which the vibrating membrane was attached rigidly to a copper wire dipping into a column of mercury which formed along with the wire part of the circuit. The inductive effect of the current on itself caused the wire and the attached membrane to vibrate in exact correspondence with the variations of the current.

PARIS

Academy of Sciences, May 2.—M. Wurtz in the chair.—The following papers were read:—Note on a property of the indicatrix, relative to the mean curvature of convex surfaces, by M. Faye.—On the inverse electromotive force of the voltaic arc, by M. Jamin. With a continuous battery current this inverse force presents a resistance to be first overcome; but with alternately contrary currents from a magneto-machine renewed at least 500 times per second, the current at each inversion profits momentarily by the inverse force called forth during the previous emission. Hence the possibility of lighting several arcs in the same circuit of a machine (and the number increases rapidly with the velocity).—Formation of a marine zoological station in the Eastern Pyrenees, by M. de Lacaze-Duthiers. Some proposed harbour alterations at Port Vendres led the author to look about for another suitable locality. Banyuls-sur-Mer made prompt application, with generous offers of help in the case of being chosen. The Port Vendres authorities were also urgent. At Perpignan the project was cordially received. Thus promises have been made of a capital of 32,000 francs, an annual sum of 750 francs, a site, a boat, and the product of a subscription. The President expressed the satisfaction of the Academy.—The derangements of progression, of station, and of equilibration arising in experiments on the semicircular canals or in maladies of these canals, are not the effects of these, but of the influence they have on the cerebellum; note by M. Bouillaud.—On the inequalities with long periods in the movements of heavenly bodies, by M. Gyldén.—On the stratigraphic series of rocks which form the ground in Upper Auvergne, by M. Fouqué. Apart from unimportant flows of Miocene basalt the series of volcanic rocks there comprises two distinct periods, both commencing with strong projections and eruptions of trachytic and acid Andesitic rocks, and terminating with very basic eruptions, porphyroid basalt and basalt of plateaux.—Examination of some artificial products obtained by James Hall, by MM. Fouqué and Lévy. Living in the end of last century, he seems to have been the first who artificially reproduced an eruptive crystalline rock (viz., whinstone).—On salicylic acid and its applications, by M. Schlumberger. *Inter alia*, it has been given daily to animals in some places for years as a protective against contagious disease. To preserve beer it is introduced twice, the first dose being only sufficient to act on lactic ferments, not yeast; a second dose prevents the alcoholic degenerating into acetic fermentation. The two doses together amount to not more than $\frac{1}{20000}$ or 0·05 gr. per litre. It is estimated that 5,000,000 hectolitres of wine were salicylised in France in 1880.—Observations of the comet *f* 1880 (Pechüle) at Paris Observatory, by M. Bigourdan.—On the principle of conservation of electricity, or second principle of the theory of electric phenomena, by M. Lippmann. The algebraic sum of all the simultaneous variations of charge is always nil. Hence the sum of the quantities of free electricity is invariable, since its total variation is always equal to zero. This law extends to all the phenomena hitherto studied. M. Lippmann translates it into analytical language.—On the protobromide and protoiodide of chromium, and on the oxalate and protoxide of chromium, by M. Moissan.—On the acetylic derivatives of cellulose, by M. Franchimont.—Action of sulphuric acid on acetic anhydride, by the same.—On a reagent fitted to distinguish ptomaïnes from vegetable alkaloids, by MM. Brouardel and Boutmy. This reagent is ferricyanide of potassium, which, in presence of pure organic bases produced in the laboratory or extracted from a body after alleged poisoning, is not any way modified, but when brought into contact with ptomaïnes (cadaveric alkalies) is changed at once to ferrocyanide, and then becomes capable of forming prussian blue with salts of iron.—On a combination of iodoform and strychnine, by M. Lextrait.—On some felspars of the valley of Bagnères-de-Luchon (Haute-Garonne), by M. Filhol.—On the physiological and pharmaco-therapic effects of inhalation of oxygen, by M. Hayem. Inhalation of oxygen is a useful auxiliary to treatment of chlorosis with iron. The action is similar to that of hydrotherapy, which stimulates the nutritive movement and the formation of red corpuscles, without sensibly modifying the individual alterations of these elements. The method effectually suppresses vomiting when not caused by organic lesion of the stomach.—On an approaching scientific voyage to the whale fishery of Vadsö, by M. Pouchet. Vadsö is on the east coast of Finmark. A steam advice-boat, *Le Coligny*, has been placed at M. Pouchet's disposal by Government. The marine fauna and flora and the rocks of the Varanger fiord will be studied, and certain questions in the biology of fishes especially.—Migration of the puceron of the poplar (*Pemphigus bursarius*, Lin.), by M. Lichtenstein.—Trichinæ encysted in the intestinal walls of the pig, by M. Chatin.—Study on some points of the anatomy of *Sternaspis scutata*, by M. Rietsch.—On two meteors observed at Nouvion-en Thierache, by M. Baudrin.

VIENNA

Imperial Academy of Sciences, May 5.—L. Fitzinger in the chair.—The following papers were read:—F. Steindachner, contributions to the knowledge of the river fishes of South America, Part iii.; ichthyological contributions, Part xi., by the same.—Dr. Karl Richter, contributions to a precise knowledge of cell-membranes of the fungi.—Dr. R. Benedikt and v. Hübl, on dinitro- and trinitroresorcin.—K. Fischer, on the salts of resorcinsulphonic acid.—Prof. H. Durège, on bodies (figures) of four dimensions.—A. Brezina, on the meteor-iron of Bolson de Mapimi.—Dr. T. Domac, on hexylene of mannite.—Prof. Stefan, on the evaporation at a circular or elliptical basin.—T. Holetschek, computation of the orbit of the "Peitho" planet (*ii* 8), discovered in 1872 by Dr. R. Luther at Düsseldorf.—Dr. H. Seeliger, on the ratio of motion in the asterism of ζ Cancri.

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